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IMAGES IN INTERVENTION

Iatrogenic Aortocoronary Arteriovenous Fistula

Percutaneous Management of a Surgical Complication

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Iatrogenic aortocoronary arteriovenous fistula (ACAVF) resulting from placement of an arterial graft to a cardiac vein is a rare complication of coronary artery bypass grafting (CABG) (1,2). Most patients present post-operatively with angina as a result of residual ischemia that is due to either an unbypassed artery or a coronary steal syndrome (CSS). A 74-year-old woman presented with recurrence of angina with a history of multivessel coronary artery disease status post-CABG in 2006 with a left internal mammary artery (LIMA) Y graft to the left anterior descending and first diagonal coronary arteries, and sequential saphenous vein graft (SVG) to the circumflex obtuse marginal (OM) and the posterior descending artery (PDA), and recurrent angina secondary to an occluded SVG resulting in a second CABG with a free radial graft anastomosed to the LIMA and then placed sequentially to the OM and PDA. Coronary angiography showed that the radial graft was in reality anastomosed to the left circumflex vein (**Figures 1A and 1B**). This iatrogenic fistula resulted in a dilated tortuous LIMA and radial grafts with possible CSS that explained the ischemia. Given that the patient was not a candidate for a third surgery and that medical therapy was not controlling his angina, a decision for percutaneous closure was made. An initial attempt with coil embolization of the coronary vein was unsuccessful because the interlock coils did not deploy appropriately. A deployment of a 3-mm Amplatzer Vascular Plug II (St. Jude Medical, Saint Paul, Minnesota) was successful, with no residual flow into the coronary sinus from the radial graft (**Figures 1C to 1F**). In summary, ACAVF is a rare, but serious, complication of CABG that may result in ischemia secondary to CSS or high-output heart failure when a significant degree of left-to-right shunting develops over time. Percutaneous closure by embolization with either detachable balloons or coils (3), or deployment of a vascular plug offers an effective and safe management for symptomatic patients.

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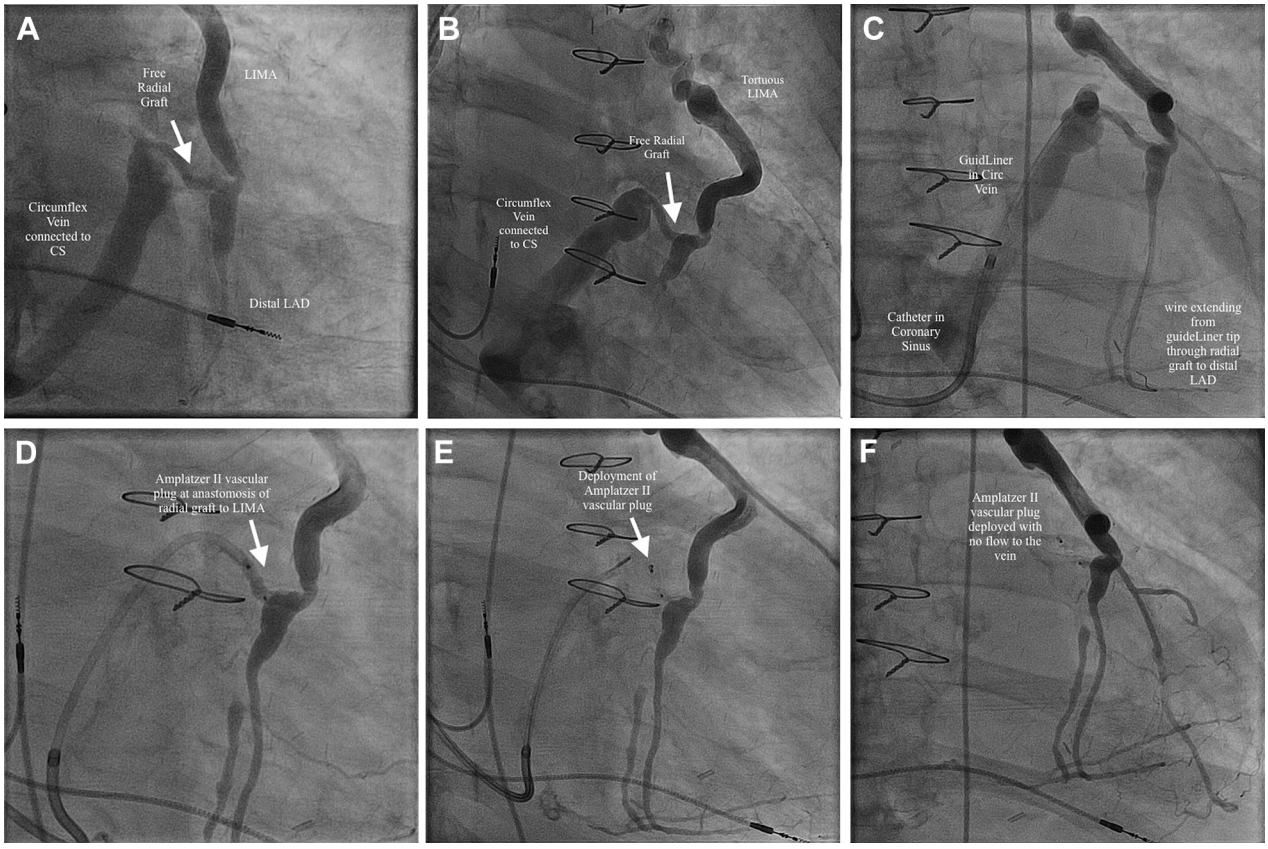
FIGURE 1 Selective LIMA Graft Angiography Showing Iatrogenic ACAVF



(A) Free radial graft connecting the left internal mammary artery (LIMA) graft to the circumflex (Circ) vein. **(B)** Large tortuous LIMA filling a large circumflex vein draining to the coronary sinus (CS). **(C)** Percutaneous procedure with a catheter placed through the CS with the GuideLiner XL catheter (Vascular Solutions Inc., Minneapolis, Minnesota) extending beyond the catheter tip to the level of the radial graft–vein anastomosis. **(D)** The Amplatzer Vascular Plug II at the level of LIMA–radial graft anastomosis. **(E)** Deployment of the Amplatzer Vascular Plug II. **(F)** Amplatzer II Vascular Plug in place with no residual flow from the LIMA to the circumflex vein. ACAVF = aortocoronary arteriovenous fistula; LAD = left anterior descending coronary artery.

REFERENCES

1. Seabra-Gomes R, Ross DN, Gonzalez-Lavin L. Iatrogenic left ventricular-right atrial fistula following mitral valve replacement. Thorax 1973; 28:235–41.

2. Renard VP, Vandenbogaerde J. Fistula between the left internal thoracic artery and the coronary sinus. N Engl J Med 2000;343: 149–50.

3. White RW, Sivananthan MU, Kay PH. Aorto-coronary bypass graft fistula after surgical treatment of circumflex coronary artery fistula: a unique variation of a rare condition successfully treated with percutaneous embolization. Interact Cardiovasc Thorac Surg 2010;10:256–7.

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